Assessment of Psychosis Proneness in African-American College Students

By: Thomas R. Kwapil, Rita A. Crump, and Danielle R. Pickup

Kwapil, T.R., Crump, R.A., & Pickup, D. (2002). Assessment of psychosis proneness in African-American college students. Journal of Clinical Psychology, 58, 1601-14.

Abstract:

The present study employed the psychometric high-risk method to investigate psychosis proneness in African-American and Caucasian college students recruited from three sites. The goals of the study were to develop norms for African-American students on the Perceptual Aberration (Chapman, Chapman, & Raulin, 1978), Magical Ideation (Eckblad & Chapman, 1983), Revised Social Anhedonia (Eckblad, Chapman, Chapman, & Mishlove, 1982), and Physical Anhedonia Scales (Chapman, Chapman, & Raulin, 1976), as well as to assess the validity of this research method with African-American students. Structured diagnostic interviews were conducted to assess the concurrent validity of these scales for identifying psychosis proneness. The results supported the use of separate norms for male and female African-American students and provided support for the concurrent validity of this research method with African-American and Caucasian college students. © 2002 Wiley Periodicals, Inc. J Clin Psychol 58: 1601–1614, 2002.

Keywords: psychosis proneness | Perceptual Aberration Scale | Magical Ideation Scale | Revised Social Anhedonia Scale | Physical Anhedonia Scale

Article:

Recent studies have supported the psychometric high-risk method for identifying individuals at risk for schizophrenia and related disorders (e.g., Chapman, Chapman, Kwapil, Eckblad, & Zinser, 1994; Kwapil, 1998). However, the majority of this research has focused on Caucasian college students. Few studies have reported norms for African American participants or examined the validity of these measure with minority populations. The lack of appropriate normative data has precluded researchers from conducting high-risk research with ethic samples or has risked the use of measures and norms that may not be appropriate for minority patients or research participants. The present study employed this method to investigate psychosis proneness in African-American college students. Specifically, the study developed norms for African-American college students on the Chapman Scales of Psychosis Proneness and assessed the concurrent validity of these measures within this population.

Psychosis Proneness

Current models of the etiology of schizophrenia (e.g. Andreasen, 1999; Gottesman, 1991; Lensenweger, 1998; Meehl, 1990) assume that the disorder arises from an interaction or accumulation of multiple risk factors, including genetic inheritance, gene expression, pre- and peri-natal insults, and psychosocial stressors. These models explicitly or implicitly assume that there is a dynamic continuum of schizophrenic-like adjustment with full-blown schizophrenia at the severe end of the continuum. Furthermore, these models suggest that there are schizophrenia-prone (or more generally psychosis-prone) individuals who have a vulnerability for schizophrenia and related disorders. However, it is hypothesized that the majority of these individuals will not decompensate, although they may experience attenuated or transient symptoms of schizophrenia. Thus, psychosis proneness may be expressed across a dynamic continuum of schizophrenic-like adjustment with severity contingent on the interaction of biopsychosocial factors (Gooding & Iacono, 1995). These models are based upon the idea that schizophrenia, spectrum disorders, and subclinical psychosis proneness share common etiologies.

The study of psychosis-prone individuals offers several distinct advantages over traditional comparisons between patients with schizophrenia and patient or non-patient control groups. One difficulty of studying patients with schizophrenia is that it often is difficult to disentangle etiologically relevant factors from the catastrophic consequences of the disorder (e.g., hospitalization, antipsychotic medications, and social stigma). The study of psychosis-prone individuals allows us to examine potential etiological factors relatively untainted by the consequences of the disorders. Furthermore, it allows us to examine biopsychosocial factors that increase or decrease the likelihood that individuals will develop schizophrenia or related disorders.

Measurement of Psychosis Proneness

Development of the Chapman Scales

In order to identify psychosis-prone individuals, the Chapmans and their colleagues developed a series of true–false questionnaires. The questionnaires measure traits and symptoms reported to be characteristic of the pre-schizophrenic condition and were based largely upon Meehl's (1964) description of schizotypy. They were not developed to generate clinical diagnoses. The scales include the Revised Social Anhedonia Scale (Eckblad et al., 1982), the Perceptual Aberration Scale (Chapman et al., 1978), the Magical Ideation Scale (Eckblad & Chapman, 1983), and the Physical Anhedonia Scale (Chapman et al., 1976). The questionnaires were developed to capture a broad range of positive and negative experiences, and they have been used widely in cross-sectional and longitudinal studies of psychosis proneness. They are especially useful as initial screening measures of psychosis proneness, as they can be administered in a group format (unlike many neurocognitive and biobehavioral measures of risk for schizophrenia). The questionnaires have been used as continuous measures, as well as to identify psychosis-prone and control groups.

Groups identified as at-risk by the psychosis-proneness scales tend to show psychological and physiological deficits similar to those seen in schizophrenic patients. Chapman et al. (1994) conducted a ten-year follow-up study of 534 Caucasian psychosis-prone and control participants. At the follow-up assessment, participants identified by the Perceptual Aberration and Magical Ideation Scales had higher rates of psychosis than did control participants. Kwapil (1998)

reported that 24% of individuals scoring high on the Social Anhedonia Scale exhibited schizophrenia-spectrum illnesses as compared to 1% of controls at a ten-year reassessment. The Physical Anhedonia Scale has not been an effective predictor of psychosis in longitudinal studies of Caucasian college students. However, in cross-sectional research, high scorers on the scale exhibited cognitive, social, and psychophysiological deficits similar to those shown by schizophrenic patients (e.g., Miller, 1986; Simons, MacMillan & Ireland, 1982). Moreover, the New York High Risk Project (Erlenmeyer-Kimling, et al., 1993) found that the offspring of schizophrenic patients who also had elevated scores on the Physical Anhedonia Scale showed increased rates of psychosis and impaired social adjustment.

Psychological Assessment and Ethnicity

There is a considerable literature regarding the need for separate norms for minority populations on measures of psychopathology and personality (Adebimpe, 1981; Escobar, 1993; Lopez & Nunez, 1987; Prichard & Rosenblatt, 1980; Rogler, Malgady, Constantino, & Blumenthal, 1987). This issue arose in part from clinicians and researchers who had concerns about interpreting minority test data from assessments standardized on Caucasian populations (Bryan, 1989).A central concern is the misclassification of minority group members due to the use of measures or norms that are not appropriate for minorities. For example, African-American patients are more likely than other groups to be misdiagnosed with schizophrenia when a mood or organic disorder is present (American Psychiatric Association, 1997). Therefore, precautions must be taken when examining clinically relevant issues in minority populations. The use of empirically validated assessment tools appears to reduce the risk of misclassification. Determining the need for separate norms (and developing them when indicated) also assists in the reduction of diagnostic bias. Furthermore, investigating levels of stratification within minority populations also counteracts against the fallacy that all ethnic minority groups are homogenous.

African Americans and Psychosis Proneness

The majority of studies investigating psychosis proneness have focused on Caucasian college students. For example, the normative data provided by the Chapmans (Chapman & Chapman, 1986) for their scales were based solely on Caucasian college students enrolled at the University of Wisconsin, due to an insufficient number of minority students in their screening samples. However, they strongly urged researchers to establish local norms, especially when assessing ethnic minorities.

Chmielewski, Fernandes,Yee, and Miller (1995) examined the performance of minority students on the psychosis-proneness scales. They reported that African-American students had significantly higher scores on all four of the scales and that males had higher scores than females on the Anhedonia scales. The authors concluded that ethnic-group specific cut-off scores should be used with all of the psychosis-proneness measures and that gender-specific cut-off scores should be used with the Physical and Social Anhedonia Scales. Chmielewski et al.'s (1995) study indicated the importance of developing ethnic and gender-based normative data. However, the generalizability of their findings is limited by the fact that the sample was obtained from one, predominately Caucasian, midwestern university aggregated across a ten-year period.

Poreh, Ross, Hanks, and Whitman (1995) administered the Perceptual Aberration and Magical Ideation Scales to 209 African-American and 591 Caucasian college students. A

significant interaction was found between gender, ethnicity, and SES on the Perceptual Aberration Scale. Specifically, they reported that African-American females with higher socioeconomic backgrounds scored higher than did African-American females from lower socioeconomic backgrounds. In addition, African-American males scored significantly higher than did Caucasian males. The authors did not find a significant difference between African-American and Caucasian students on the Magical Ideation Scale. However, neither of these studies examined the validity of the questionnaires for identifying or predicting psychosis proneness in minority samples.

Goals of the Present Study

The present study has three broad goals. The initial purpose of the study is to examine the performance of African-American college students at three Universities in North Carolina on the Revised Social Anhedonia, Perceptual Aberration, Magical Ideation, and Physical Anhedonia Scales. These values will be compared to normative data for male and female Caucasian college students from North Carolina and Wisconsin to determine whether separate norms are needed for African-American students on these measures. The second goal of the study is to examine the concurrent validity of the scales for identifying psychosis proneness in African-American college students. It is hypothesized that, consistent with findings in Caucasian samples, African-American college students who score deviantly high on the scales of psychosis proneness will demonstrate elevated levels of psychotic-like and schizotypal experiences and poorer overall adjustment, relative to control participants. The final goal of the study is to identify a prospective sample of psychosis-prone and control participants who will be invited to participate in longitudinal assessments of the predictive validity of the psychosis-proneness scales in African-American young adults. Given the lack of an established literature on psychosis proneness in African Americans and the well-documented problems of applying measures developed and normed on a Caucasian sample to a minority sample, we refrain from offering specific hypotheses regarding ethnic differences on the questionnaire and interview measures.

Method

Participants

African-American college students were recruited from Introductory Psychology classes at the North Carolina Agricultural and Technical State University (NCA&T) and Winston–Salem State University (WSSU), which are historically African-American institutions, and from the University of North Carolina at Greensboro (UNCG). Caucasian students were recruited in the same manner from UNCG. UNCG is predominately Caucasian, with African-American students accounting for approximately 16% of the enrollment. The analyses in this study were limited to African-American and Caucasian college students because there were not a sufficient number of students from other ethnic backgrounds available at these institutions.

Mass Screening. Usable mass screening questionnaires were completed by 638 male and 1749 female Caucasian students and 100 male and 542 female African-American students at UNCG, 77 male and 79 female African-American students at NCA&T, and 23 male and 123 female African-American students at WSSU. In addition, summary data were available on 775 male and 840 female Caucasian college students at the University of Wisconsin—Madison

(Chapman & Chapman, 1986). These norms provided a basis of comparison with the Caucasian college students from UNCG. However, data on individual participants from Wisconsin were not available, precluding statistical comparison of the groups from the two states.

The screening packet included a demographic information sheet, the Magical Ideation, Perceptual Aberration, Social Anhedonia, and Physical Anhedonia Scales, and a 13-item infrequency scale (Chapman & Chapman, 1986). The items from the questionnaires were intermixed. Participants who did not identify their ethnic background, failed to complete at least five percent of the screening items, or received a score of 3 or above on the Infrequency Scale, were omitted from the present study.

Selection of Psychosis-Prone Groups. Individuals who scored at least 1.96 SD above the mean on the Perceptual Aberration, Social Anhedonia, Physical Anhedonia, or Magical Ideation Scales were considered high-risk participants. Individuals who scored deviantly high on either the Magical Ideation or Perceptual Aberration Scales were combined into a single (PerMag) group because the scales tend to correlate about as highly as possible given their respective reliabilities (Chapman, Chapman, & Miller, 1982). Participants who scored deviantly high on more than one scale were assigned to the group for which they had the highest standard score (following the procedure of Chapman et al., 1994). Control participants were selected who scored less than 0.5 SD above the mean on each of the scales. Cutoff scores were computed separately by gender and ethnicity based upon norms established in this study. Table 1 contains the demographic characteristics of interviewed participants. Overall, there was a higher proportion of females in the African-

Table 1
Demographic Characteristics of the Interview Participants at the Concurrent Assessment

Group	*n*	% Female	Mean Age
African American			
Perceptual Aberration/Magical Ideation	34	85%	20.4 (4.6)
Social Anhedonia	39	85%	21.4 (5.3)
Physical Anhedonia	29	86%	19.8 (3.1)
Control	50	76%	20.2 (4.7)
Caucasian			
Perceptual Aberration/Magical Ideation	80	71%	19.9 (4.6)
Social Anhedonia	65	69%	20.9 (5.3)
Physical Anhedonia	44	71%	19.1 (2.4)
Control	128	77%	20.2 (4.7)

American students than in the Caucasian students. However, we compared the gender ratios between each of the psychosis-proneness groups and the control group separately for African-American and Caucasian participants. None of these comparisons were significant. There were no significant main effects or interactions for group and ethnicity on age of the participants.

Materials and Procedures

Psychosis-Proneness Scales. The Perceptual Aberration Scale contains 35 items that assess mild schizophrenic-like perceptual and bodily distortions. Sample items include, "I sometimes have had the feeling that some parts of my body are not attached to the same person" [keyed true] and "My hands and feet have never seemed far away" [keyed false]. The Magical Ideation Scale contains 30 items that assess belief in forms of causation that generally are considered implausible or invalid. Sample items include, "I have occasionally had the silly feeling that a TV or radio broadcaster knew I was listening to him" [keyed true] and "Numbers like 13 and 7 have no special powers" [keyed false]. The Social Anhedonia Scale contains 40 items that tap schizoid asociality and social disinterest. Sample items include, "Having close friends is not as important as many people say" [keyed true] and "I sometimes become deeply attached to people I spend a lot of time with" [keyed false]. The Physical Anhedonia Scale consists of 61 items that assess deficits in aesthetic and sensory gratification. Sample items include, "There just are not many things that I have ever really enjoyed doing" [keyed true] and "Beautiful scenery has been a great delight to me" [keyed false]. Each of the psychosis-proneness scales was constructed following the method of rational scale development advocated by Jackson (1970). Candidate items were carefully screened to ensure high item-scale correlations and to rule-out correlations with measures of social desirability and acquiescence.

Diagnostic Interview. The interview assessed symptoms of schizotypy and overall adjustment. It included the schizoid, paranoid, and schizotypal personality-disorder modules of the International Personality Disorder Examination (IDPE; Loranger, Janca, & Sartorious, 1997). The Wisconsin Manual for Assessing Psychotic-like Experiences (Chapman & Chapman, 1980; Kwapil, Chapman, & Chapman, 1999) was used to assess psychotic symptoms across a broad range of clinical and subclinical deviancy. Each participant's overall functioning was assessed using the Global Assessment Scale (GAS; Endicott, Spitzer, Fleiss, & Cohen, 1976), which indicates current functioning with a range from extreme psychopathology to superior adjustment. In addition to the measures listed above, the Negative Symptom Manual (NSM; Kwapil & Dickerson, 2001) was administered to 78% of the Caucasian participants and 65% of the African-American participants. The NSM, which provides a companion rating system to the Wisconsin Manual, quantifies negative symptoms of schizophrenia across a range of clinical and subclinical deviance. While interrater reliability was not assessed on this sample, reliability data from our laboratory are available on these measures. Interrater reliability is .89 for the Wisconsin Manual and .94 for the NSM (Kwapil & Dickerson, 2001).

The diagnostic interviews lasted approximately one to two hours and were audiotaped. The interviewers and raters were unaware of the participants' group membership. A clinical psychologist and five advanced graduate students with extensive training and clinical experience conducted the interviews (two of the interviewers were African American and four were Caucasian). Diagnoses were based on the criteria of the Diagnostic and Statistical Manual—4th edition (American Psychiatric Association, 1994). All participants received course credit or payment for their participation.

Statistical Method

Conventional analysis of variance was employed to compare the groups when quantitative data were analyzed. Chi-square or Fisher's exact test was used when the data were qualitative or categorical. Due to the large size of the mass-screening sample, was set at .001 for analyses

involving these data in order to minimize the likelihood of Type-I error and to reduce the likelihood of reporting statistically significant, but inconsequential differences. In addition, effect size (Cohen's d) was reported for the main effects in these analyses.

Results

Scores on the Psychosis-Proneness Scales

In order to examine ethnic and gender differences on the Chapman Scales of Psychosis Proneness, means, standard deviations, internal consistency reliability, and cut-off scores (mean + 1.96 SD) were computed separately for each scale by ethnic group and gender. Two (gender) x two (ethnicity) ANOVAs were computed for the raw scores on each of the scales (note that only the North Carolina students were included in the analyses). Table 2 contains the group values on the psychosis-proneness scales by ethnicity and gender separately for the North Carolina African-American students and the North

Table 2
Scores on the Psychosis-Proneness Scales by Ethnic Group and Gender

	African American		NC Caucasian		WI Caucasian	
	Male (n = 200)	Female (n = 744)	Male (n = 638)	Female (n = 1749)	Male (n = 775)	Female (n = 840)
Perceptual Aberration Scale						
Mean	6.44	6.20	6.48	6.00	6.87	6.57
SD	5.12	4.97	6.31	5.89	6.06	5.88
Alpha	.85	.84	.89	.90	.89	.89
Cut-off	17	16	19	18	19	19
Magical Ideation Scale						
Mean	10.50	10.33	9.75	9.55	9.73	9.33
SD	5.13	5.16	5.85	5.98	5.83	5.47
Alpha	.79	.80	.84	.86	.85	.83
Cut-off	21	21	22	22	22	21
Physical Anhedonia Scale						
Mean	17.88	16.23	13.79	10.38	13.71	9.26
SD	6.55	6.60	7.74	5.82	6.80	5.24
Alpha	.77	.80	.86	.80	.82	.78
Cut-off	31	30	29	22	28	20
Social Anhedonia Scale						
Mean	11.36	10.34	9.62	7.30	8.91	6.78
SD	5.24	5.39	6.17	5.33	5.12	4.49
Alpha	.77	.80	.84	.83	.79	.79
Cut-off	22	21	22	18	20	16

Note: Alpha = coefficient α internal consistency reliability; Cut-off = cut-off score for identifying participants who score 1.96 *SD* above the group mean. WI Caucasian data from Chapman & Chapman (1986).

Carolina and Wisconsin Caucasian college students. On the Perceptual Aberration Scale, neither the main effect for ethnicity, F(1,3327).08, d.02, the main effect for gender, F(1,3327) 1.87,

d=.07, nor the ethnicity x gender interaction were significant, F(1,3327)=.19. Similarly, on the Magical Ideation Scale, neither the main effect for ethnicity, F(1,3327) =8.39, d =.13, the main effect for gender, F(1,3327) =.48, d =.02, nor the ethnicity x gender interaction, F(1,3327)=.01 were significant.

Both the main effect for ethnicity, F(1,3327) 279.98, p< .001, d =.82, and the main effect for gender, F(1,3327)=72.39, p<.001, d=.41, were significant for the Physical Anhedonia Scale, indicating that the African-American students exceeded the Caucasian students, and the male students exceeded the female students on the measure. However, the ethnicity x gender interaction was not significant, F(1,3327)=8.79. On the Social Anhedonia Scale, both the main effect for ethnicity, F(1,3327) =88.53, p < .001, d=.48, and the main effect for gender, F(1,3327)=43.39, p < .001, d=.33, were significant. However, the ethnicity x gender interaction was not significant, F(1,3327) = 6.49. This pattern of differences was comparable to the findings from the Physical Anhedonia Scale, with African-American students exceeding Caucasian students, and male students exceeding female students on both measures. The internal consistency reliabilities of each of the psychosis-proneness scales were comparably high across the ethnic and gender groups. Furthermore, the means, standard deviations, reliability, and cut-off scores appeared similar between the Wisconsin and North Carolina Caucasian participants.

Comparison of African-American College Students from the Three Universities. In order to rule out differential performance on the psychosis-proneness scales by African- American students at the three universities, 2 (gender) x 3 (school) ANOVAs were computed for each of the psychosis-proneness scales. Neither the gender x school interaction nor the main effect for school were significant. Comparable to the previous findings, main effects for gender were found for both of the Anhedonia scales. Based upon these findings, the same norms were used at all three universities to select African-American students for the concurrent validity study.

Concurrent Validity of the Psychosis-Proneness Scales in African-American College Students

To assess the concurrent validity of the Chapman Scales of Psychosis Proneness in African-American college students, 2 (ethnicity) x 4 (group) ANOVAs were computed on measures of psychopathology and adjustment. To control for Type-I error, Dunnett's t-test was computed for post-hoc comparisons of the psychosis-prone groups with the control group. Based on preliminary findings that males and females did not differ on the interview measures of psychosis proneness, males and females were combined into high-risk and control groups. This method was consistent with the procedure reported by Chapman et al. (1994). To rule out interactive effects of interviewer and participant ethnicity, 2 (participant ethnic status) x 2 (interviewer ethnic status) ANOVAs were computed for each of the variables. None of the analyses yielded a significant interviewer x participant ethnic-status interaction.

Table 3 presents comparisons of the psychosis-prone and ethnic groups on measures of schizotypy and overall adjustment. The main effect for group on the GAS was significant, F(3,461)=9.73, p < .001. However, neither the main effect for ethnicity, F(1,461)= 1.65, nor the ethnicity x group interaction, F(3,461)=0.93, were significant. The Per-Mag and Social Anhedonia groups, but not the Physical Anhedonia group, had poorer

Table 3
Comparison of Psychosis-Prone and Ethnic Groups on Measures of Schizotypy

	PerMag	SocAnh	PhyAnh	Control
Global Assessment Scale				
African American	68.0 (13.6)	69.6 (8.9)	73.3 (9.6)	72.4 (10.7)
Caucasian	69.0 (8.8)	69.1 (10.5)	74.5 (7.8)	76.0 (8.9)
Wisconsin Manual (Psychotic-like Experiences)				
African American	2.1 (2.2)	1.5 (1.9)	0.7 (1.5)	0.8 (1.8)
Caucasian	2.9 (2.7)	1.9 (2.4)	1.0 (1.9)	0.5 (1.4)
IPDE Schizotypal Dimensional Score				
African American	1.5 (1.2)	1.3 (1.4)	1.0 (1.6)	0.5 (1.0)
Caucasian	1.9 (2.1)	1.9 (2.5)	1.0 (1.9)	0.3 (0.8)
IPDE Schizoid Dimensional Score				
African American	0.3 (0.9)	1.9 (2.6)	1.1 (1.8)	0.3 (0.8)
Caucasian	0.6 (1.4)	1.9 (2.6)	0.8 (1.4)	0.1 (0.4)
IPDE Paranoid Dimensional Score				
African American	0.6 (1.2)	1.6 (1.8)	0.9 (2.3)	0.6 (1.0)
Caucasian	1.0 (1.9)	1.3 (1.7)	0.8 (1.4)	0.3 (0.7)
Negative Symptom Manual				
African American	2.0 (3.3)	6.5 (4.8)	6.1 (6.0)	1.6 (2.9)
Caucasian	2.0 (3.1)	7.0 (6.1)	3.2 (3.8)	1.0 (1.7)

Note: PerMag = Perceptual Aberration/Magical Ideation group; PhyAnh = Physical Anhedonia group; SocAnh = Social Anhedonia group; IPDE = International Personality Disorder Examination

functioning than the control group, $p < .001$, in both cases. On the Wisconsin Manual rating of psychotic-like experiences, there was a main effect for group, $F(3,461)=18.20$, $p < .001$. There was a trend towards a main effect for ethnicity, $F(1,461)=2.82$, $p < .10$, although the ethnicity x group interaction, $F(3,461) =1.80$, was not significant. The PerMag and the Social Anhedonia groups, but not the Physical Anhedonia group exceeded the control group, p .001 in both cases. This is consistent with cross-sectional and longitudinal findings summarized by Kwapil et al. (1999). Similarly, the main effect for group on the IPDE Schizotypal dimensional score was significant, $F(3,461)=11.59$,$p < .001$. There was a trend towards a main effect for ethnicity, $F(1,461)=2.56$, $p < .10$, although the ethnicity x group interaction was not significant, $F(3,461) = 1.86$. The PerMag ($p < .001$), Social Anhedonia ($p < .001$), and Physical Anhedonia ($p <.05$) groups all exceeded the control group on the schizotypal dimensional score. On the IPDE Schizoid dimensional score, there was a main effect for group, $F(3,461) = 21.95$, $p < .001$. However, neither the main effect for ethnicity, F(1,461)0.24, nor the ethnicity x group interaction, $F(3,461)=0.58$, were significant. The Social Anhedonia and the Physical Anhedonia groups, but not the PerMag group, exceeded the control group, $p < .001$ and $p < .01$, respectively. The main effect for group on the IPDE Paranoid dimensional score was significant, $F(3,461) = 17.68$, $p < .001$, but neither the main effect for ethnicity, $F(1,461)=0.24$, nor the ethnicity x group interaction, $F(3,461)=2.34$, attained statistical significance. Both the PerMag and Social Anhedonia groups exceeded the control group, $p < .01$ and $p < .001$, respectively. The main effect for group on the NSM was significant, $F(3,337) = 32.42$, $p < .001$. The main effect for ethnicity was not statistically significant, $F(1,337) = 2.59$, although the ethnicity x group interaction demonstrated a trend, $F(3,337) = 2.13$, $p <.10$. The Social Anhedonia and the Physical Anhedonia groups, but not the PerMag group, exceeded the control group, $p < .001$ in both cases. Thus, the pattern of group differences on the measures of psychotic-like adjustment

did not appear to differ between African-American and Caucasian college students and were generally consistent with previous studies of college students (e.g., Chapman et al., 1994).

While several of the participants reported symptoms of schizotypy, none of them met criteria for a psychotic disorder. However, seven participants qualified for diagnoses of schizophrenia-spectrum personality disorders. These included a Caucasian female Social Anhedonia participant who met criteria for schizotypal and schizoid personality disorders, a Caucasian female Physical Anhedonia participant who met criteria for schizotypal personality disorder, two Caucasian male and one African-American female Social Anhedonia participants who met criteria for schizoid personality disorder, and an African- American female Physical Anhedonia and a Caucasian female PerMag participant who met criteria for paranoid personality disorder.

Discussion

The use of psychometric markers of psychosis proneness has received increasing attention during the past 20 years (Chapman, Chapman, & Kwapil, 1995). Cross-sectional findings and preliminary longitudinal results support the construct of psychosis proneness and indicate that such individuals are at heightened risk for developing schizophrenia and related conditions. Unfortunately, the majority of this research has involved Caucasian college students. There has been a paucity of studies involving minority and non-college samples from the general population. The lack of studies with minority participants is troubling for several reasons. First, there is considerable debate about the rates of schizophrenia in minority populations and about the explanations for possible discrepancies in these rates. A second concern is that some of the limited number of studies that have assessed psychosis proneness in minority samples may have relied on measures and/or norms that are not appropriate for minority patients or research participants. The paucity of studies in this area has resulted in a lack of stable norms for minority populations. Furthermore, it is not clear whether psychometric instruments that identify psychosis proneness in Caucasians are similarly valid with minority populations. The present study examines these issues in African-American college students using the Perceptual Aberration, Magical Ideation, Social Anhedonia, and Physical Anhedonia Scales. While this study sheds light on the assessment, validity, and phenomenology of psychosis proneness in African-American students, similar studies need to be undertaken with African Americans from different demographics than the participants in the present study, as well as with other ethnic groups. The assessment of the construct validity of psychosis proneness is an ongoing process that should progress by testing such hypotheses in differing populations.

Development of Norms on the Psychosis-Proneness Scales

The present study developed norms for African-American college students on the Chapman Scales of Psychosis Proneness using a multi-site design. In addition, the study also provided an informal comparison of the norms for Caucasian students from different states. It should be noted that the sample size for the male African-American students was considerably less than that of the other groups. While the sample size should be sufficient for establishing stable norms, the difficulty recruiting male African-American students raises the concern that the present sample may be somewhat atypical of this group.

The norms on the Perceptual Aberration and Magical Ideation Scales for the North

Carolina African-American students, North Carolina Caucasian students, and the Wisconsin Caucasian students were strikingly similar. These findings suggest that these traits are experienced to a consistent degree among African-American and Caucasian college student populations. The lack of significant ethnic and gender differences suggests that researchers can rely safely on the same normative values for male and female, African-American and Caucasian college students. However, the present study provides separate norms by gender and ethnicity.

Consistent with the findings for the Wisconsin and North Carolina Caucasian students, the means for the male African-American students were significantly higher than for the African-American females on the Social Anhedonia and Physical Anhedonia Scales. In addition, the African-American students had higher means on these scales than the Caucasian students. These findings strongly indicate the use of separate norms for African- American males and females on these measures. The present study reported comparable estimates of internal consistency reliability among the subgroups on each of the measures (e.g., coefficient on the Perceptual Aberration Scale ranged from .85 to .90 for the four subgroups). Further study will examine the item–scale correlations and rates of item endorsement to determine whether individual items are performing in a comparable fashion across gender and ethnicity. The finding of markedly different patterns of item–scale correlations between African-American and Caucasian students would suggest the need for developing race-specific revisions of the measures.

The present study provides norms on the Chapman scales for African-American and Caucasian college students by gender. These findings generally are comparable with the values reported by Chmielewski et al. (1995). Minor differences between the studies simply may reflect regional differences and the ethnic diversity of the respective universities. However, further study should be made to determine the generalizability of these norms to other regions and to non-college student samples.

Cross-Sectional Validity of the Psychosis-Proneness Scales in African-American Samples

The second goal of the present study was to provide preliminary evidence regarding the validity of the psychometric high-risk method and the Chapman Scales of Psychosis Proneness in African-American students. African-American and Caucasian high-risk and control participants demonstrated similar patterns of results on the rating of psychotic like experiences and schizophrenia-spectrum personality-disorder traits. Consistent with numerous cross-sectional and longitudinal studies of psychosis proneness (e.g., Chapman et al., 1994; Kwapil et al., 1999), the PerMag group exceeded the control group on ratings of psychotic-like and schizotypal symptoms.

The interview findings for the Physical Anhedonia groups stood in contrast with Chapman et al.'s (1994) results. The Physical Anhedonia participants exceeded the controls on ratings of schizotypal, schizoid, and negative symptoms. The difference on the NSM appeared largely due to elevated ratings for the African-American Physical Anhedonia participants.

In line with Kwapil (1998), the present findings indicated that the Social Anhedonia participants were deviant on ratings of psychotic-like experiences, dimensional ratings of schizotypal, schizoid, and paranoid personality-disorder symptoms, and negative symptoms. While the Physical Anhedonia Scale primarily identified negative symptom psychopathology and the PerMag Scales primarily identified positive symptom psychopathology, the Social Anhedonia group exhibited elevated rates of both positive and negative symptoms (consistent with the findings of Kwapil, 1998).

Limitations

Despite the advantage of multi-site sampling, the data gathered in this study was limited to African-American college students in North Carolina. College students provided a useful sample for the initial investigation of norms and concurrent validity of the measures in African Americans because they are entering the age of risk for psychotic disorders and because comparison data on Caucasian students are readily available. College students provide a somewhat stratified sample of their age cohort in terms of their intellectual ability; however, they generally are representative of their cohort in terms of their rates of Axis-I and Axis-II psychopathology (Lenzenweger, 1999; Lenzenweger, Loranger, Korfine, & Neff, 1997). Nevertheless, studies of non-college samples, as well as cross-cultural studies, are needed before generalization about the possible differences between ethnic groups can be considered fully. In addition, longitudinal assessments are required in order to determine the applicability of this method for assessing psychosis proneness in minority populations. As noted above, the final purpose of the study was to establish a pool of African-American participants for a longitudinal study to assess the predictive validity of the psychosis-proneness scales.

Conclusions

The present study established separate norms on the Perceptual Aberration, Magical Ideation, Social Anhedonia, and Physical Anhedonia Scales for African-American male and female college students. The results generally indicated a similar pattern of normative data for African-American and Caucasian college students, suggesting that the scales are likely tapping similar constructs in African-American and Caucasian students. The study also provided preliminary support for the validity of these measures for identifying psychosis proneness in African-American samples. However, longitudinal studies are required to provide more comprehensive assessments of the validity of the scales. Overall, the findings justify and encourage further use of the psychometric high-risk method and the Chapman Scales of Psychosis Proneness with African-American samples. It also encourages the development of norms and the assessment of validity with other minority populations.

References

Adebimpe, V.R. (1981). Overview: White norms and psychiatric diagnosis of Black patients. American Journal of Psychiatry, 138, 279–285.

American Psychiatric Association. (1997). Practice guideline for the treatment of patients with schizophrenia American Journal of Psychiatry, 154, 1– 63.

American Psychiatric Association. (1994). Diagnostic and statistical manual of mental disorders (4th ed.). Washington, DC: Author.

Andreasen, N.C. (1999).Aunitary model of schizophrenia: Bleuler's "fragmented phrene" as schizencephaly. Archives of General Psychiatry, 56, 781–787.

Bryan, P. (1989). Psychological assessment of black americans. Psychotherapy in Private Practice, 7, 141–154.

Chapman, L.J., & Chapman, J.P. (1980). Scales for rating psychotic and psychotic-like experiences as continua. Schizophrenia Bulletin, 6, 476– 489.

Chapman, L.J., & Chapman, J.P. (1986). Norms on theWisconsin psychosis-proneness scales. Unpublished data.

Chapman, L.J., Chapman, J.P., & Kwapil, T.R. (1995). Scales for the measurement of schizotypy. In A. Raine, T. Lencz, & S. Mednick (Eds.), Schizotypal personality disorder. Cambridge, England: Cambridge University Press.

Chapman, L.J., Chapman, J.P., Kwapil, T.R., Eckblad, M., & Zinser, M.C. (1994). Putatively psychosis-prone subjects 10 years later. Journal of Abnormal Psychology, 103, 171–183.

Chapman, L.J., & Chapman, J.P., & Miller, E.N. (1982). Reliabilities and intercorrelations of eight measures of proneness to psychosis. Journal of Consulting and Clinical Psychology, 50, 187–195.

Chapman, L.J., Chapman, J.P., & Raulin, M.L. (1976). Scales for physical and social anhedonia. Journal of Abnormal Psychology, 85, 374–382.

Chapman, L.J., Chapman, J.P., & Raulin, M.L. (1978). Body image aberration in schizophrenia. Journal of Abnormal Psychology, 87, 399– 407.

Chmielewski, P.M., Fernandes, L.O.L., Yee, C.M., & Miller, G.A. (1995). Ethnicity and gender in scales of psychosis proneness and mood disorders. Journal of Abnormal Psychology, 104, 464– 470.

Eckblad, M., & Chapman, L.J. (1983). Magical ideation as an indicator of schizotypy. Journal of Consulting and Clinical Psychology, 51, 215–225.

Eckblad, M., Chapman, L.J., Chapman, J.P., & Mishlove, M. (1982). The revised social anhedonia scale. Unpublished test (copies available from T.R. Kwapil, Department of Psychology, University of North Carolina at Greensboro P.O. Box 26164 Greensboro, NC 27402– 6164).

Endicott, J., Spitzer, R.L., Fleiss, J.L., & Cohen, J. (1976). The global assessment scale:Aprocedure for measuring overall severity of psychiatric disturbance. Archives of General Psychiatry, 33, 766–771.

Erlenmeyer-Kimling, L., Cornblatt, B.A., Rock, D., Roberts, S., Bell, M., & West, A. (1993). The New York high-risk project: Anhedonia, attentional deviance and psychopathology. Schizophrenia Bulletin, 19, 141–53.

Escobar, J. (1993). Psychiatric epidemiology. In A.C. Gaw (Ed.), Culture, ethnicity, and mental illness. Washington, DC: American Psychiatric Press, Inc.

Gooding, D.C., & Iacono, W.G. (1995). Schizophrenia through the lens of a developmental psychopathology perspective. In D. Cicchetti, & D.J. Cohen, (Eds.), Manual. of developmental psychopathology, Vol. II. Risk, disorder, and adaptation. New York: Wiley.

Gottesman, I.I. (1991). Schizophrenia genesis: The origins of madness. San Francisco, CA: Freeman.

Jackson, D.N. (1970). A sequential system for personality scale development. In C.N. Spielberger (Ed.), Current topics in clinical and community psychology (Vol. 2, pp. 61–96). New York: Academic.

Kwapil, T.R. (1998). Social anhedonia as a predictor of the development of schizophrenia spectrum disorders. Journal of Abnormal Psychology, 107, 558–565.

Kwapil, T.R., Chapman, L.J., & Chapman, J. (1999). Validity and usefulness of the Wisconsin manual for rating psychotic-like experiences. Schizophrenia Bulletin, 25, 363–375.

Kwapil, T.R., & Dickerson, L.A. (2001). Negative symptom manual. Unpublished interview manual.(Available from T.R. Kwapil, Department of Psychology, University of North Carolina at Greensboro, P.O. Box 26164, Greensboro, NC 27402-6164.)

Lenzenweger, M.F. (1998). Schizotypy and schizotypic psychopathology: Mapping an alternative expression of schizophrenia liability. In M.F. Lenzenweger & R. H. Dworkin (Eds.), Origins and development of schizophrenia. Washington, DC: APA Press.

Lenzenweger, M.F., Loranger, A.W., Korfine, L., & Neff, C. (1997). Detecting personality disorders in a nonclinical population: Application of a 2-stage for case identification. Archives of General Psychiatry, 54, 345–351.

Lopez, S., & Nunez, J.A. (1987). Cultural factors considered in selected diagnostic criteria and interview schedules. Journal of Abnormal Psychology, 96, 270–272.

Loranger, A.W., Janca, A., & Sartorious, N. (Eds.). (1997). Assessment and diagnosis of personality disorders. New York: University Press.

Meehl, P.E. (1964). Manual for use with checklist of schizotypic signs. (No. PR-73–5). Minneapolis, MN; University of Minnesota Research Laboratories of the Department of Psychiatry.

Meehl, P.E. (1990). Toward an integrated theory of schizotaxia, schizotypy, and schizophrenia. Journal of Personality Disorders, 4, 1–99.

Miller, G.A. (1986). Information processing deficits in anhedonia and perceptual aberration: A psychophysiological analysis. Biological Psychiatry, 21, 100–115.

Poreh, A.M., Ross, T.P., Hanks, R., & Whitman, D.R. (1995). Ethnicity, socioeconomic background, and psychosis-proneness in a diverse sample of college students. Current Psychology: Developmental, Learning, Personality, Social, 13, 365–370.

Prichard, D.A., & Rosenblatt, A. (1980). Racial bias in the MMPI: A methodological review. Journal of Consulting and Clinical Psychology, 48, 263–267.

Rogler, L.H., Malgady, R.G., Costantino, G., & Blumenthal, R. (1987). What do culturally sensitive mental health services mean? The case of Hispanics. American Psychologist, 42, 565–570.

Simons, R.F., MacMillan, F.W., & Ireland, F.B. (1982). Reaction-time crossover in preselected schizotypic subjects. Journal of Abnormal Psychology, 91, 414– 419.

Copies of the Chapman Scales of psychosis proneness can be downloaded from the Internet at: http://www.uncg.edu/t_kwapil/ppscales.html

The authors are indebted to Dr. Anthony Perry at North Carolina Agricultural and Technical State University and to Dr. Bessie Paige at Winston-Salem State University for their assistance with student recruitment, to Dr. Rosemery Nelson-Gray and Dr. Richard Shull for their many helpful comments on earlier versions of this manuscript, and to Drs. Loren and Jean Chapman for permission to use their normative data.

Correspondence concerning this article should be addressed to: Thomas R. Kwapil, Department of Psychology, University of North Carolina at Greensboro, P.O. Box 26164, Greensboro, NC 27402– 6164; e-mail: t_kwapil@uncg.edu.